

Ecology in Ancient Greece

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This article investigates the characteristic attitudes of the Greeks toward nature, which formed the perceptual framework for their ecological thinking. Two major attitudes are discerned. One regarded nature as the theatre of the gods, whose interplay produced observed phenomena, but whose localization gave them particular, restricted roles. The other attitude viewed nature as the theatre of reason, and made the beginnings of ecological thought possible. The contributions of several Greek forerunners in the field of ecology are characterized. The most consistent, balanced ecological writer in ancient Greece was Theophrastus, but his conception of an autonomous nature, interacting with man, was overshadowed in the history of ancient and medieval thought by the anthropocentric teleology of Aristotle.

The word 'ecology'¹ derives from Greek roots, and although the Greeks never coined the word *oikologia*, it will nonetheless profit the scholar to inquire as to how far Greek precedents in attitude and thought may also lie at the roots of ecological science and the modern ecological crisis. The natural historians of the nineteenth century, familiar with the lexical storehouse of the Greek language through the then ubiquitous classical education, made the happy choice of *oikos* and *logos* to name the new science of the interrelationship of living things with each other and their environment. *Oikos* means 'house, an inhabited place, a habitat', and *logos*, of course, the root of the usual suffix applied to the sciences, means 'word, reason, doctrine, an orderly rational inquiry'. Thus the newly coined word may be taken to signify the operation of reason regarding the problem of the interrelationship of living things with their surrounding habitat or natural environment. Among the living things which may be studied in this way are human beings, and when this is the case, the word takes on a curious double significance: with mankind as, so to speak, both actor and critic, equally relating to the natural environment and undertaking the meta-study of that relationship.

It is the purpose of this paper to investigate the characteristic attitudes of the Greeks toward nature in an attempt to understand their thought

concerning environment, and the perceptual framework within which it was possible for them to begin the rational endeavor that would be called ecology today; for even if the Greeks themselves never used the word, they do seem to have originated the inquiry. In the present study, there will be no attempt to attribute an 'environmental concern' in the modern sense to the ancient Greeks. The Greeks were acute observers of the natural world and, as shall be seen further on, were aware of some forms of environmental degradation. But they do not seem to have perceived an active human responsibility to manage or protect the natural environment as a whole, for reasons which will soon be in evidence. The attempt here is rather to delineate broadly two basic and seemingly contradictory Greek attitudes toward the natural environment which affected the rise of ecological thought and continued to shape Western man's perception of the natural environment and his relationship to it down to the present time.

The first of these two attitudes, which appeared earlier in Greek history, no doubt before any surviving written record, saw nature as the theatre of the gods. The gods – the Greeks believed – had their abodes in nature; they appeared from nature, were often clothed in natural forms, and withdrew into nature when they left human contact. To say this is to convey something much more than that the Greeks regarded the gods as natural forces personified, though they did regard them so indeed. Rather, the Greeks believed that the natural environment was the scene of divine activities which could be witnessed by men. Even a rational philosopher like Thales could state, 'all things are full of gods'.²

The identification of the gods with natural phenomena was exceptionally close in early Greek thought. To the Greek, the growing grain was Demeter at work. Demeter was not simply a hypostatization of the idea of grain, but in a more important sense, grain itself and all the actions of grain. As the oracle of Delphi is recorded to have enunciated before the battle of Salamis, the Persians will come and be defeated 'either when Demeter is scattered forth, or when she is gathered as harvest'.³ To give another example, the weather was Zeus as actor in the natural scene. In a striking phrase of the Odyssey, Homer says not merely 'Zeus caused rain to fall' (a concept in itself not foreign to Greek thought), but 'Zeus rained the whole night through'.⁴ The actions of the gods were perceived by the Greeks in nature. When an earthquake happened, it was interpreted literally as Poseidon and his horses with shaking flanks and pounding hooves. Fire was the special effect of Hephestus, and each of

the gods had his or her manifestations in nature. Thus the natural environment, in all its interrelationships, could be perceived, not merely conceived, as the continuing interplay of the deities with each other and with mankind.

The early Greeks regarded the concerns of the gods to be both similar to human concerns and entangled in the affairs of mortals. This being the case, men could influence the course of events in nature, wittingly or unwittingly. The actions in the theatre of nature became, to some extent, a commentary on the actions of human beings. When men obstructed justice in the courts, Zeus responded with a disastrous flood,⁵ but when a king ruled his people with wise care for their welfare, the gods could respond by making the fields fruitful, the herds fertile, and the sea bountiful.⁶

Their perception of the natural environment as the theatre of the gods encouraged the Greeks to consider nature as sacred, and many human activities which affected nature, such as agriculture, were surrounded by religious precautions of various kinds. Yet it prevented for a time the consideration of nature *qua* nature, and interposed between man and the environment a conceptual screen which interpreted phenomena in polytheistic terms. The gods were seen not as orderly natural principles which might have been understood as paradigms of ecological relationships, but as capricious actors, responding to men and to each other in ways analogous to the actions of human beings. When people who thought characteristically in these terms were concerned with the effects of natural events on their lives, they thought first of the divine pleasure or anger which those events revealed; they were less concerned with the direct impact of their own actions on nature than with the attempt to please the gods or avert their anger by worship and sacrifice. They were, of course, constantly observing nature, but saw its workings as supernaturally controlled. Thus they were understandably reluctant to interfere in any major way with the established arrangement of the natural order as they perceived it, out of fear of offending the gods. If the gods had created a peninsula, they might well object to the hubristic efforts of men to construct a canal through the isthmus and turn it into an island. Herodotus evinces Xerxes' bridging the Hellespont (as well as his whipping the waves), breaching the isthmus of Athens, drinking the rivers dry and burning groves of trees as signs of his dangerous overweening pride, soon to be punished by the nemesis of defeat.⁷ Several canals were opposed by signs of divine disfavor, as in the case of one begun at Cnidus: 'The Cnidians began to dig through their isthmus, but the oracle of Delphi

stopped them. So difficult it is for man to alter by violence what the gods have established.⁸

Given such a perception of the world of nature, the only science possible was the interpretation of signs and omens. Through the medium of natural events, the gods sent warnings to mortals who could interpret them correctly. Eagles, herons and hawks, singly or in groups, bearing prey or flying free, on the left or on the right, showed forth the intentions of the gods from the world of nature – to mention only one class of revelatory phenomena. There were sceptics even in the earlier times, but they were regarded as improvident fools. Eurymachus, in the *Odyssey*, was thus made to remark, 'Many birds there are that fare to and fro under the rays of the sun, and not all are fateful',⁹ when the seer Halitherses had predicted from the encounter of two eagles that Odysseus would soon return. The result of this instance of premature rationalism was that Eurymachus failed to take due warning and was killed when the enraged husband returned.

The Greeks nevertheless did tend to feel that not all natural events were necessarily intended as omens for every mortal, and that some places were preferred to others by the divine actors. The great gods hallowed great places, mountain peaks and wilderness localities endowed with exceptional natural beauty. Zeus' Mt. Olympus and beloved Mt. Ida and Apollo's Mt. Parnassus and Mt. Helicon provide a few examples. The oracular shrine of Apollo was located at Delphi, one of the finest natural sites in the entire Greek world, believed to be the center of the earth. Along with the great gods were countless local deities of lesser places, river gods, sprites of springs, and guardian presences in groves of trees. It was in or near these particularly holy precincts that wise mortals – so the Greeks believed – would come to placate and worship the gods. The protection of the gods and goddesses worshipped in such places extended to the immediate environment. The destruction of a sacred grove by felling trees would have been considered dangerous sacrilege. Similar taboos protected the animals which inhabited the groves, also the fish, and kept the springs and streams from pollution.¹⁰ After the general deforestation of Greece and long into the Roman period the huge old trees of the *temenoi* or sacred enclosures, protected by custom and religious feeling, remained scattered about the landscape. Temples were built within or nearby, but the groves, often no more than a few trees but sometimes of considerable extent, were left in a more or less natural state. Pausanias, the author of a travel guide for Roman tourists, noticed many such groves in the second

century A.D., including one whose huge cypresses overshadowed a nearby hill.¹¹

A dichotomy was thus introduced into Greek thinking about the gods and the natural environment. The existence of sacred *topoi* created also the implication that other places were less than sacred. Within the shadows of the grove one might speak to the gods and hear their murmured replies, but outside shone the ordinary light of day, and in Greece, as has been so often noted, the light has a particular clarity. Once the gods had been ascribed a particular locality, it became possible to accord them more specific and restricted roles, until they became no longer actors but merely parts of the scenery.

To continue the metaphor, for some Greek thinkers there was room for another actor on the stage, and the natural environment became the theatre of reason. This is, of course, a salient Greek contribution to the development of human thought which made not only ecology, but all natural science, possible. It is the second major attitude toward the natural environment which will be discussed in this article. The basic assumption of all Greek philosophers of nature is that the natural world operates according to rational principles in a dependable manner; as Aristotle was to put it, 'nature does nothing in vain'.¹² Therefore the human mind, using its own rational processes, can come to understand nature, since the human mind and the natural environment both operate according to reason, or *logos*. The early natural philosophers – Thales and Heraclitus among others – differed in attributing a basic substance to the universe and assessing the reality of change, but all agreed that the world of nature is intelligible by human reason.

One cannot speak of the existence of ecology among the earlier Greek philosophers, since conscious division of human inquiries into subject fields had not yet been made. At best, a few ecological principles seem to have been formulated in a tentative, preliminary manner. The philosophers did try to answer questions concerning the relationships of various living things, particularly human beings, to other living things and to natural environment as a whole. These questions could be called 'ecological' and they prepared the way for later, more systematic ecological inquiry.

Anaximander, the friend and disciple of Thales, was acutely conscious of the dangers posed by a hostile natural environment to human beings who spend a very long childhood in a relatively helpless state, and who are in any case much weaker than many animals. How could such defenseless creatures have survived in the difficult days before the origin of

technology and civilization? His answer was that they had arisen from creatures like fishes, in which form they were better protected from predators.¹³

* Empedocles added a rudimentary form of the idea of natural selection. Assuming to begin with that all creatures arose from a random concatenation of the elements, he stated that only those which were assembled from parts which suited them to live in the world had actually survived. Those whose assortment of parts was unluckily odd perished.¹⁴ Another way of putting the conception of Empedocles would be to say that only those creatures whose structure fitted their purpose survived. The teleological nature of this assertion, as of the foregoing one, is clear and is typical of Greek thought on ecological subjects.

Herodotus demonstrated a wide-ranging interest in natural history, gathering information from three continents. Hardly a true systematic scientist, he sometimes repeated fantastic stories about animals and plants without necessarily believing them, but occasionally recorded a significant observation. In pondering the relationship between predators and prey, he noticed that timid animals that are eaten by others produce young in great abundance, while predators give birth to only a few offspring, and thus a balance of numbers is achieved.¹⁵ Protagoras, as recorded by Plato in his dialogue bearing the sophist's name, claimed that animals were furnished with various organs such as fur, claws, wings, swift limbs, etc., so as to compensate them with defenses against each other.¹⁶ Democritus believed that many of the advances made in human civilization are the result of observing the habits of other animals.¹⁷ Human beings have learned how to weave from the spider and how to sing from the birds. They build houses of clay because they have watched the swallow at work. The fragmentary and etiological character of these early comments and others like them is self-evident.

The earliest extant example of consistently developed environmental thought occurs in a work usually attributed to Hippocrates, the physician, entitled *Airs, Waters, Places*, which points out the importance of the natural environment in the cause, diagnosis and treatment of illnesses.¹⁸ By knowing the climate, exposure and quality of the water in a place – the author taught – a physician could know what diseases to expect among the people living there, and could suggest courses of treatment including changes of environment that might help to heal his patients. But beyond this, Hippocrates developed a general theory of environmental determinism which held that the physical and mental characteristics of

various groups of people are determined by the latitude and climate of the countries in which they live. It had long been held by the Greeks that the Ethiopians are black because they live near the places where the sun rises and sets, and are exposed to its rays. Hippocrates held that all races are formed by their environment; for example, those who live in places where the air is thick will have slow and phlegmatic temperaments. Thucydides, the historian, who reflected the influence of Hippocrates in many other ways, extended the principle of environmental influence to cover the events of human history as well. He suggested that the thin, dry soil of Attica made that land unattractive to potential invaders, thus saving it from conquest.¹⁹

Environmental determinism, however, is only one possible avenue of ecological thought, and taken by itself is always a barrier to further ecological insights, since it insists that nature is the actor, and creatures such as men only the passive recipients of influences. Mankind was to other Greek thinkers not a mere victim of the environment or passive entity. They saw the human species as able to alter the natural world as no other creatures can. Sophocles, in his play *Antigone*, gave the chorus a great hymn to sing in praise of the ability of human beings to control the earth and its creatures, and subject them to alteration. Man, the chorus sings, can cross the sea, plow the earth, snare birds and beasts, and tame the horse and mountain bull. He, unlike the beasts, knows speech and thought, and can escape frost and rain. However, man cannot escape death and seems not to know how to prefer justice to evil.²⁰

One of the best ecological analyses in ancient times of human impact on the earth is found in Plato's *Critias*.²¹ The passage, occurring though it does in the recounting of the myth of Atlantis, clearly refers to Attica in the decades immediately preceding Plato's own day, and he even offers confirmation in the form of his own observations. He described the deforestation of Attica and the resultant soil erosion and drying of springs, so that 'what now remains compared with what then existed is like the skeleton of a sick man, all the fat and soft earth having wasted away, and only the bare framework of the land being left'. Plato knew that these changes had taken place not long before. He wrote that he had seen buildings in Athens still supported by strong wooden beams which had been cut from trees that had grown on hillsides he knew were eroded and covered only with herbs: 'food for bees', in his own day. Further, he had visited shrines once dedicated to the guardian spirits of flowing springs which had since dried up. These comments of Plato are opposed to those of

Thucydides, who had assumed that Attica's soil had always been poor, and are the best surviving evidence that environmental degradation was noticed in ancient times, although Plato neither lamented the fact nor made any prescriptive comments.

Interesting as Plato's remarks on the environment are, they constitute only isolated passages in the bulk of his writings. It was Aristotle whose intensively and extensively developed biological concepts set precedents for much of later Western thinking in this entire field. Himself an acute observer and a systematizer of great ability, nevertheless Aristotle adopted a consistently teleological interpretation of nature which prevented many ecological insights and established an anthropocentric and utilitarian attitude toward nature. All things, the philosopher taught, have a purpose or end for which they are created. When a thing fulfills its end, it is useful and beautiful. Therefore, no animal lacks beauty, because all animals are formed for their proper ends. And what is their proper end? Aristotle claims: 'the service of man.'²² All animals, and indeed all other things, exist for man's good. They are suitable instruments for the satisfaction of human needs, as in domestication. Other creatures are of a lower order, subservient to the needs of man. It is not unfair to Aristotle's thought to draw from this line of reasoning the corollary that other living things have no justifying purpose of their own, and therefore no independent right to existence. Incidentally, it is this aspect of the Greek attitude toward nature as the theatre of reason which prevented any development of environmental concern among the Greeks, since according to this view the entire natural world was to be used for human purposes. It was considered right and proper that man should make whatever use seemed appropriate of any animal or plant, any stream or stone.

Aristotle's student Theophrastus has long stood in the shadow of his teacher, and has thus been underestimated. He has often been called the Father of Botany, but a study of his writings from the standpoint of ecology shows something of his true greatness. He deserves another title, Father of Ecology. More than half of Theophrastus' botanical writings deal with ecological observations. It is not a matter of isolated passages, but of a consistent viewpoint. Theophrastus does not consider a plant in isolation, but asks what its relationship is as a living organism to sunshine and exposure, soil and climate, water and cultivation, and other plants and animals.

He based his statements in many cases on actual observation. He sometimes mentioned an actual tree which he had seen and measured, such as

the plane-tree by the watercourse in the Lyceum at Athens.²³ Like Aristotle, he had Alexander's specimens and reports to use.

Theophrastus did not accept Aristotle's idea that all animals and plants have a purpose: namely, the service of mankind. He did not deny that there is purpose in nature; he found the goal of an annual plant, for example, to be reached in the production of fruit and seed, thus providing for a new generation.²⁴ But the *telos* of things in nature, he maintained, is not always evident. What is the purpose of droughts and floods? He asks for an 'effort to determine the conditions on which real things depend and the relations in which they stand to one another' through careful observation rather than the facile assigning of final causes.²⁵

Nothing grows or flowers before its proper season. Various plants thrive in different climates, and the attempts of people to grow them in countries far from their point of origin often fail. A fruit tree planted in another country may flower but not produce fruit.²⁶ He recognizes not only the difference between major climate zones, but also microclimates. Some trees grow well on the sunny slopes of mountains, others on the shady northern side. Plants which require water will not develop successfully in dry, sandy locations, and the reverse is also true. So strong are these preferences as to locality that, after a devastating flood, the same kinds of trees will appear in the same places, as if following the example of those that grew there before.²⁷ Those who plant seeds should consider the soil, sun and winds, because 'locality is more important than cultivation and care'.²⁸ The habit of growth of plants will vary under changes in these conditions. He also observed that mountains offer a wide variety of conditions due to elevation and aspect, and knew of the existence of narrow endemic plants, particularly on isolated mountains. He was acquainted with the extreme importance of water to plant growth in arid regions, too.

A particular interest of Theophrastus lies in the response of plants to domestication.²⁹ Some plants, he realized, cannot be cultivated, but of those which can, some take on a very different appearance under cultivation due to the soil, irrigation and manure which they receive. He discusses the changes owing to cultivation, such as the tendency to produce fewer fruit of better quality, and to grow straighter stems with fewer knots. The habit of growth depends on how close together the plants are planted. He discusses various weeds and their means of spreading.

Finally, Theophrastus noticed certain local changes in climate brought about by human activities. True, his teacher Aristotle had postulated the

existence of long-term, major changes in climate due to the aspects of the heavens, including a 'great winter' many years in length,³⁰ yet Theophrastus gathered information on actual temperature changes noticed during his own time in Greece due to draining marshes, altering the course of a river, and deforestation.³¹

If all his extant writings in the field of natural philosophy are considered, Theophrastus will emerge as a consistent, well-balanced ecologist, and a full study of him as such is long overdue. Unfortunately, he had no successors in this respect. Perhaps the only subsequent ancient writer who deserves mention is the geographer Strabo, who offers some passages of ecological import and interesting points of view, but cannot be called an ecologist in the same sense as Theophrastus.³²

The two attitudes described here, viz. that which regarded nature as the theatre of the gods, and that which regarded nature as the theatre of reason, coexisted and conflicted throughout later Greek history. The former was always consistent with the official state cults and no doubt held by the majority of the common people. The latter was current among the learned and sophisticated. It is this attitude which had the greater influence on later thought, and a brief remark or two on that influence is perhaps in order.

Theophrastus' willingness to regard the natural environment as fulfilling its own purposes, interrelating with man but at the same time autonomous, yielded in the history of ancient and medieval thought to the anthropocentric teleology of his teacher, Aristotle. The Greek attitude toward nature exemplified by Aristotle was of incalculable influence in later times. His somewhat utilitarian interpretation of nature was quite congenial to the pragmatic – and eclectic – Romans, who characteristically treated the natural environment like one of their conquered provinces. He was accepted as the greatest philosophical authority by the scholastics of the Middle Ages, and the doctrine of Genesis that God created man to 'have dominion over . . . all the earth', 'and over every living thing that moves upon the earth'³³ was interpreted from the point of view of Aristotle's teaching: the natural world has as its purpose the service of man! No more effective combination of ideas to encourage the untrammelled exploitation of the earth's natural resources can possibly be imagined.

NOTES

- 1 According to the Oxford English Dictionary, the first occurrence in English is in the 1873 translation of Ernst Haeckel's *Natürliche Schöpfungsgeschichte* (1868). There were no doubt earlier instances in German, as this citation itself suggests.
- 2 Aristotle, *On the Soul*, A, 5, 411 a 7.
- 3 Herodotus, *Histories*, vii, 141.
- 4 Homer, *Odyssey*, xiv, 457–8.
- 5 Homer, *Iliad*, xvi, 384–92.
- 6 Homer, *Odyssey*, xix, 109–14.
- 7 Herodotus, *Histories*, vii, *passim*.
- 8 Pausanias, *Description of Greece*, ii, 1, 5.
- 9 Homer, *Iliad*, ii, 181–2.
- 10 The fish at Pharai. Pausanias, *op. cit.*, vii, 22, 4.
- 11 *Ibid.*, viii, 24, 7.
- 12 Aristotle, *Politics*, i, 3, 7 (1256 b 20).
- 13 Plutarch, *Strom.* fr. 2; Plutarch, *Symp. Quaest.* 730 f.
- 14 Hermann Diels, *Die Fragmente der Vorsokratiker*, Weidmann, Dublin/Zürich 1966, Vol. I, pp. 333–5 (Empedokles fr. B 57–62).
- 15 Herodotus, *Histories*, iii, 108, repeated in Plato, *Protagoras*, 321 b.
- 16 Plato, *Protagoras*, 320 c–2 a.
- 17 Diels, *op. cit.*, Vol. II, p. 173 (Demokritus fr. B 154).
- 18 Hippocrates, *Airs, Waters, Places*.
- 19 Thucydides, *Peloponnesian War*, i, 1–2.
- 20 Sophocles, *Antigone*, 11, 332–75.
- 21 Plato, *Critias*, 111 B–D.
- 22 Aristotle, *loc. cit.*
- 23 Theophrastus, *Enquiry into Plants*, i, 7, 1.
- 24 *Ibid.*, i, 2, 2.
- 25 Theophrastus, *Metaphysics*, ix, (34).
- 26 Theophrastus, *Enquiry into Plants*, iii, 3, 5.
- 27 *Ibid.*, iii, 1, 2.
- 28 *Ibid.*, ii, 2, 8.
- 29 *Ibid.*, i, 3, 2–6, etc.
- 30 Aristotle, *Metaphysics*, 352 a 28 ff.
- 31 Theophrastus, *Causes of Plants*, v, 14, 2–5.
- 32 Strabo, *Geography*.
- 33 Genesis 1: 26, 28.

- my Habilitationsschrift on Marx's dialectical method, MS.) In the first ed. of *Capital*, Marx thought it sufficient to make fairly wide use of the terminology of Hegel's dialectic, because he thought this would make clear the particular relation between concrete and abstract labour in commodity production. See in his first ed., op. cit., esp. pp. 19 f. and 44. Engels persuaded Marx that only Hegelians would understand this terminology. See his letter to Marx of 16 June 1867, and Marx's answer of 22 June 1867, in Marx, Engels, *Werke*, op. cit., Bd. 31, S. 303–6.
- 29 See Marx, *Das Kapital*, in Marx, Engels, *Werke*, op. cit., S. 91.
- 30 Marx, *Theorien über den Mehrwert*, Bd. 2, in Marx, Engels, *Werke*, op. cit., Bd. 26.2, S. 161. My trans.
- 31 Carver, op. cit., p. 55.
- 32 Cf. Marx, *Das Kapital*, in Marx, Engels, *Werke*, op. cit., S. 88.
- 33 Ibid., S. 87.
- 34 Karl Marx, *Grundrisse der Kritik der politischen Ökonomie* (Rohentwurf), 1857–8, Bd. I, Verlag für fremdsprachige Literatur, Moskau 1939, S. 593. Reprint Europäische Verlagsanstalt, Frankfurt/M s.a.
- 35 Karl Marx, *Das Kapital*, op. cit., S. 28.

II. The Other Side of Ecology in Ancient Greece: Comments on Hughes

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The classical roots of ecological sensibility lie not only in the 'theatre of reason' (Greek nature philosophy and natural history), but also in religious mythology. More important than the world seen as the 'theatre of the gods', however, was the radically ecological view of death stated in mythic form by Empedocles and the Pythagoreans. The very emergence of the 'theatre of reason' marked a significant stage of man's alienation from nature (and from himself), though the struggle between rationalistic anthropocentrism and a more ecological perspective reappeared within philosophy itself, so that the legacy of 'the Philosopher' is a dual one.

Donald Hughes ('Ecology in Ancient Greece', *Inquiry*, Vol. 18 [1975], pp. 115–25) has done us all a service by his succinct survey of views of nature in ancient Greece, especially by calling our attention to Theophrastus. My terms 'survey' and 'views' – like Hughes' two organizing images, 'the theatre of the gods' and 'the theatre of reason' – suggest, however, the limitation of his approach. Ecology is represented as something essentially

spectatorial, a 'rational endeavor' growing out of the theatre of reason, and becoming in modern times a 'special field' of natural science. Certainly there are academic biologists who will recognize this lineage, but the general ecological sensibility emerging today is not limited to the (apparent) spectatorial objectivity of the scientific approach.

It may seem Romantic to feel nostalgia for a culture in which all things were 'full of gods' (Thales), but the founding father of the modern ideology of resource conservation, John Evelyn, lamented that his contemporaries no longer revered trees as sacred, and that only prudential considerations of national security and national prosperity could be mustered to try to deter England's deforestation.¹ Also, in his pioneering treatise on urban air pollution, Evelyn appealed overtly to the popular concern for public health while subtly invoking images of pollution as a profanation of sacred places: fuliginous vapors were penetrating all of London, including the churches, the royal palace, and even the lungs of His Most Sacred Majesty, Charles II.² Evelyn was, of course, a transitional figure in whom a classical education and a religious sensibility confronted two different aspects of the modern ecological crisis. We who have proceeded farther along the path of modernization and secularization are more apt to articulate our anxieties in ostensibly scientific (?) terms, such as the ecological domino theory: first the dodo, then the passenger pigeon, then the brown pelican... and then man – the last endangered species. Yet the beginnings of the resource conservation ideology in the seventeenth century, the humane movement in the late eighteenth century, and the wilderness and wildlife preservation movement in the nineteenth century (to name only three of the historical tributaries flowing into the contemporary 'ecology movement') owed little if anything to scientific ecology in either the classical or the late nineteenth-century sense. For example, John Muir deplored the damming of Hetch Hetchy not because it endangered man's life-support system through the oversimplification of ecosystem diversity, but because it was a profanation of a sacred place where a person could encounter the holy.³

Undoubtedly, as Hughes suggests, some places were holier than others. The phenomenon of widespread deforestation interspersed with small sacred groves marked the late Hellenic landscape, as it did the Buddhist portion of the Chinese countryside.⁴ In the Greek case, does this mean that religious mythology was ecologically ineffectual in its essential nature, or that it lost its effectiveness and became merely localized (i.e. anomalous) in the course of a general desacralization of nature? 'Ancient Greece', as Hughes discusses it, was already an agricultural society (evoked by the chorus of *Antigone* in terms of man's rape of the earth and his domination of nonhuman species), already well on the way to ecological deterioration (as Plato's remarks on the deforestation of Attica suggest). The emergence of the theatre of reason – that is, of philosophy, including nature philosophy – may have been more a symptom of that decline than a source of rejuvenation.

In appraising the theatre of reason it is well to keep in mind Cornford's dictum that the Greeks, at a particular point in time, 'discovered Nature'⁵

– or, to state it more radically, the Greeks *invented* Nature. To philosophize about nature meant to adopt a particular posture – that of an observer who stood over against nature as something out there and looked at it, seeking to discover regularities in its movements. ‘The rift has begun to open between the self and the external world.’⁶ To philosophize in its pure form meant not only repudiating the explanation of the world in terms of the actions of the gods but also repudiating the participatory consciousness typical of myth and ritual. Thus Plato’s philosophical indictment of the poets and tragedians reached its highest pitch in his denunciation of *mimesis*, the activity of imitation or representation whereby a person played the role of another. *Mimesis* not only violated the principle of specialization (‘justice’) but allowed outlet to the ‘irrational’ parts of the *psyche*, which were ‘bestial’ in character; it could even take the form of a person’s letting some elemental natural force such as the roaring sea or the rolling thunder speak through him.⁷ With philosophy and science (the theatre of reason) was born that alienation of humanity from a reified Nature that is still preserved in the language of so much of the current ecology movement, most notably in the phrase ‘natural environment’.

An environment implies a point of reference, a subject for which all else is milieu. Hence, ecology is not unreasonably ‘teleological’, though the more sophisticated it is, the more movable is the point of reference. By Hughes’ own account, Theophrastus (‘the Father of Ecology’) was teleological in his viewpoint, but in a non-anthropocentric way (a plant had its own *telos*). Aristotle’s error was (allegedly) to be teleological in a purely anthropocentric way, as if all things existed for the service of man. Yet this error seems to be shared by the mainstream of modern science and much contemporary ecology. From the beginnings of the modern scientific worldview as articulated by Descartes and Bacon to such recent and diverse figures as Teller, Salk, Ehrlich, and Commoner, explanation in terms of efficient cause may have replaced explanation in terms of final cause as a way of linking external phenomena, but the underlying purpose of the scientific enterprise has generally been to advance the interests of the human species by learning the laws of nature so as to better manage them to our advantage.⁸ Only now the focus has shifted somewhat from ‘progress’ (e.g. the indefinite warding off of individual mortality through medical science) to mere ‘survival’ of the human species.

As for Aristotle, it seems a shame to give up ‘the Philosopher’ wholly to the enemy. The anthropocentric teleology cited by Hughes is found chiefly in the *Politics* (1256b) and, to a lesser extent, in the *Ethics*, in both of which works the frame of reference is explicitly species-specific – ‘the good for man’. Elements of another perspective are visible in the *Metaphysics*, the *Physics*, and the writings in natural history (*On the Soul*, *Parts of Animals*, *The History of Animals*, *The Generation of Animals*, etc.). All forms of life are ensouled and strive to participate in eternity as best they can – plants by reproduction (which has apparently become the *summum bonum* for man as well, in the age of Malthus, Darwin, and contemporary ecology), many

nonhuman animals (and man) by striving for a well-being beyond mere survival. One gets a vision of a great diversity of species, varieties, and individuals, each with its own inner principle of motion, its own potentiality to actualize – a hierarchical but also immensely variegated and complex universe whose ultimate prime mover is not man.

As for the Scholastics, the ultimate point may be not so much that they read *Genesis* through the anthropocentric eyes of Aristotle as that the medieval University of Paris chose to establish Aristotle’s *Politics* and *Ethics* as standard texts while prohibiting the teaching of his *Metaphysics* and nature philosophy.⁹

The more subtle objection to Aristotle applies to him insofar as he followed the moral philosophy of Socrates and Plato and assumed as axiomatic the proposition that every species ought to act so as to maximize its differentia rather than its genus. The premise of man’s world-alienation (and of his self-alienation – the tyranny of rationality over the rest of the psychic ecosystem) is engraved in this basic axiom of classical moral philosophy, but little attention is paid to it, partly because it is so basic, partly because it is still so widely shared, not only by modern philosophers¹⁰ but also by the colloquial projections of ordinary language, which still oppose the truly human to bestial cruelty and to merely vegetative existence.

Finally, in any account of ancient Greek views of nature, the tradition of Pythagoras and Empedocles surely deserves mention, since it exhibited in both theory and practice a deep sense of the kinship of human with non-human (especially animal) life. The notion of reincarnation embodied in mythic form the basic ecological principle that the death of an individual is a kind of translation or recycling of cosmic energy from one form to another. Thus Empedocles:

There is no birth in mortal things, and no end in ruinous death. There is only mingling and interchange of parts, and it is this that we call ‘nature’ [*physis*].¹¹

Pythagoras, Empedocles, and writers in the Pythagorean tradition – such as the Plato of the Myth of Er, Plutarch, and Porphyry¹² – provided a well-known alternative, a kind of counter-culture, to the two established Greek outlooks aptly called by Hughes ‘the theatre of the gods’ and ‘the theatre of reason’. It was not the spectacle of the gods embodied in storm or harvest, or the scenery of the world as classified by natural historians, that was expressed in Empedocles’ statement that ‘In the past I have been a boy and a girl, a bush, a bird, and a dumb water-dwelling fish’.¹³

What is the relation of such participatory mysticism to ecology? Reflection on the contemporary ecology movement suggests that, while there is an ecology of scientific observation, with man standing in the center of the universe gazing at ‘his’ reified ‘natural environment’, trying theoretically to comprehend himself in relation to it, there is also an ecology of participation exhibited by every eco-activist who has fought to prevent the damming of a wild river, to preserve an endangered species, or to save a grove of trees from

being cut down to make a parking lot. The ecology of scientific observation provides convenient rationalizations for such resistance actions in terms of salvaging mankind's life-support system, but the motivating force of resistance action is more likely rooted in the tradition of Pythagoras and Empedocles. In our deep suspicion that at some time, in some place, in some way, we have been, are now, or will be, a river, another animal, or a tree.

NOTES

- 1 *Sylva, Or a Discourse of Forest-Trees and the Propagation of Timber In His Majesties Dominions*, London 1664, 'To the Reader'.
- 2 *Fumifugium, or the Inconvenience of the Aer and Smoke of London Dissipated*, London 1661.
- 3 *The Yosemite*, Century, New York 1912, pp. 225 ff.
- 4 See also Yi-Fu Tuan, 'Our Treatment of the Environment in Ideal and Actuality', *American Scientist*, Vol. 58 (May-June 1970), pp. 244 ff.
- 5 F. M. Cornford, *Before and After Socrates*, Cambridge University Press, Cambridge 1932, Ch. I.
- 6 Ibid.
- 7 *Republic* 392-8, 603-8. Needless to say, this is the same Plato who wrote dialogues and (selectively) utilized myths himself. Perhaps the repudiation of the mythological consciousness on the part of a philosopher is most intense when he is struggling to differentiate himself from it; and perhaps philosophy cannot fully dispense with mythology.
- 8 For an analysis of the ideological roots of the modern scientific worldview in Bacon and Descartes, see William Leiss, *The Domination of Nature*, Braziller, New York 1972, and John Rodman, 'The Dolphin Papers', *North American Review*, Spring 1974.
- 9 See Frederick Copleston, *Medieval Philosophy*, Harper & Bros., New York 1961, p. 72.
- 10 E.g. J. S. Mill, *Utilitarianism*, Ch. II.
- 11 Empedocles, Fragment 8, in Hermann Diels, *Die Fragmente der Vorsokratiker*, Weidmannsche Buchhandlung, Berlin 1922, 4th ed., Vol. 1; trans. by Philip Wheelwright, *The Presocratics*, Odessey Press, New York 1966, p. 127.
- 12 Plato, *Republic* 614-20; Plutarch, 'The Cleverness of Animals...', 'Odysseus and Gryllus', 'That Brute Beasts Reason', 'On the Eating of Flesh'; Porphyry, *On Abstinence from Animal Flesh*.
- 13 Empedocles, Fragment 117, in Diels, op. cit.; trans. by Wheelwright, op. cit., p. 141.

IN INQUIRY 18